

## CLAIMS

What is claimed is:

1. A computer-implemented method for compressing video comprising:  
calculating an activity metric for macroblocks in a first field; and  
selecting a quantizer scaling value for corresponding macroblocks in a  
second field based on said calculated activity metric.
  
2. The method as in claim 1 wherein calculating an activity metric  
comprises:  
determining a number of bits allocated to each of said macroblocks.
  
3. The method as in claim 2 wherein said number of bits are determined  
after said macroblocks in said first field have been run-length and entropy  
encoded.
  
4. The method as in claim 2 wherein said number of bits are determined  
directly following a discrete cosine transform (“DCT”) of said macroblocks in said  
first field.
  
5. The method as in claim 1 wherein selecting comprises:  
selecting relatively higher quantizer scaling values for corresponding  
macroblocks if said calculated activity metric is relatively high and relatively lower  
quantizer scaling values for corresponding macroblocks if said calculated activity  
metric is relatively low.

6. The method as in claim 1 further comprising:  
determining whether calculating said activity metric and selecting said quantizer scaling values for said first and second fields, respectively, produces a bitrate above a predetermined maximum threshold; and  
adjusting said quantizer scaling values to lower said bitrate if said bitrate is above said predetermined maximum threshold.

7. The method as in claim 1 wherein said first and second fields are in different frames.

8. The method as in claim 1 further comprising:  
selecting a particular quantizer matrix for corresponding macroblocks in said second field based on said calculated activity metric.

9. An apparatus for compressing video comprising:  
an activity metric analysis module to calculate an activity metric for macroblocks in a first field; and  
a scaling variable selector module to select a quantizer scaling value for corresponding macroblocks in a second field based on said calculated activity metric.

10. The apparatus as in claim 9 wherein calculating an activity metric comprises:  
determining a number of bits allocated to each of said macroblocks.

11. The apparatus as in claim 10 wherein said number of bits are determined after said macroblocks in said first field have been run-length and entropy encoded.

12. The apparatus as in claim 10 wherein said number of bits are determined directly following a discrete cosine transform ("DCT") of said macroblocks in said first field.

13. The apparatus as in claim 9 wherein selecting comprises:  
selecting relatively higher quantizer scaling values for corresponding macroblocks if said calculated activity metric is relatively high and relatively lower quantizer scaling values for corresponding macroblocks if said calculated activity metric is relatively low.

14. The apparatus as in claim 9 further comprising:  
determining whether calculating said activity metric and selecting said quantizer scaling values for said first and second fields, respectively, produces a bitrate above a predetermined maximum threshold; and  
adjusting said quantizer scaling values to lower said bitrate if said bitrate is above said predetermined maximum threshold.

15. The apparatus as in claim 9 wherein said first and second fields are in different frames.

16. The apparatus as in claim 9 further comprising:  
a quantizer matrix selector module to select a particular quantizer matrix  
for corresponding macroblocks in said second field based on said calculated  
activity metric.

17. A method comprising:  
encoding a first video image in a series of images with a first quantizer  
scaling value;  
calculating spatial activity within a first area in said first video image; and  
selecting a second quantizer scaling value in a corresponding first area in  
a second video image based on said spatial activity within calculated for said first  
area.

18. The method as in claim 17 wherein selecting further comprises:  
selecting a relatively higher second quantizer scaling value if said  
calculated spatial activity is above a first threshold value and a relatively lower  
second quantizer scaling value if said spatial activity is below a second threshold  
value.

19. The method as in claim 17 wherein said first and second video images  
are first and second video fields comprising a video frame.

20. The method as in claim 19 wherein said first area is a macroblock  
within said first and second video fields.

21. The method as in claim 17 further comprising:
  - calculating spatial activity within a second area in said first video image;
  - and
  - selecting a third quantizer scaling value in a corresponding second area in a second video image based on said spatial activity within calculated for said second area.
22. The method as in claim 21 further comprising:
  - selecting a relatively higher third quantizer scaling value if said calculated spatial activity in said second area is above a first threshold value and a relatively lower third quantizer scaling value if said spatial activity in said second area is below a second threshold value.
23. An article of manufacture including program code which, when executed by a machine, cause said machine to perform the operations of:
  - calculating an activity metric for macroblocks in a first field; and
  - selecting a quantizer scaling value for corresponding macroblocks in a second field based on said calculated activity metric.
24. The article of manufacture as in claim 23 wherein calculating an activity metric comprises:
  - determining a number of bits allocated to each of said macroblocks.
25. The article of manufacture as in claim 24 wherein said number of bits are determined after said macroblocks in said first field have been run-length and entropy encoded.

26. The article of manufacture as in claim 24 wherein said number of bits are determined directly following a discrete cosine transform ("DCT") of said macroblocks in said first field.

27. The article of manufacture as in claim 23 wherein selecting comprises: selecting relatively higher quantizer scaling values for corresponding macroblocks if said calculated activity metric is relatively high and relatively lower quantizer scaling values for corresponding macroblocks if said calculated activity metric is relatively low.

28. The article of manufacture as in claim 23 including additional program code to cause said machine to perform the operations of:

    determining whether calculating said activity metric and selecting said quantizer scaling values for said first and second fields, respectively, produces a bitrate above a predetermined maximum threshold; and  
    adjusting said quantizer scaling values to lower said bitrate if said bitrate is above said predetermined maximum threshold.

29. The article of manufacture as in claim 23 wherein said first and second fields are in different frames.

30. The article of manufacture as in claim 23 including additional program code to cause said machine to perform the operations of:

    selecting a particular quantizer matrix for corresponding macroblocks in said second field based on said calculated activity metric.

31. An article of manufacture including program code which, when executed by a machine, cause said machine to perform the operations of:  
encoding a first video image in a series of images with a first quantizer scaling value;  
calculating spatial activity within a first area in said first video image; and  
selecting a second quantizer scaling value in a corresponding first area in a second video image based on said spatial activity within calculated for said first area.

32. The article of manufacture as in claim 31 wherein selecting further comprises:

selecting a relatively higher second quantizer scaling value if said calculated spatial activity is above a first threshold value and a relatively lower second quantizer scaling value if said spatial activity is below a second threshold value.

33. The article of manufacture as in claim 31 wherein said first and second video images are first and second video fields comprising a video frame.

34. The article of manufacture as in claim 33 wherein said first area is a macroblock within said first and second video fields.

35. The article of manufacture as in claim 31 including additional program code to cause said machine to perform the operations of:

calculating spatial activity within a second area in said first video image;  
and

selecting a third quantizer scaling value in a corresponding second area in a second video image based on said spatial activity within calculated for said second area.

36. The article of manufacture as in claim 35 including additional program code to cause said machine to perform the operations of:

selecting a relatively higher third quantizer scaling value if said calculated spatial activity in said second area is above a first threshold value and a relatively lower third quantizer scaling value if said spatial activity in said second area is below a second threshold value.

37. The article of manufacture as in claim 31 wherein calculating spatial activity comprises determining a number of bits required to encode said first area in said first video image.

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